



## Personal Entropy

***The end of Life/observer is the end of the Universe/observed.***

Recently I began realizing that my perception of the world around me was beginning to change in a peculiar way. There are no longer more important and less important themes or work, everything is becoming equally (un)important both conceptually and visually.





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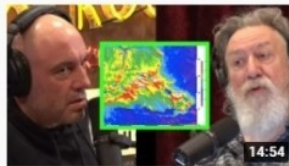
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**Bicycle Conversion using a 10,000 Watt Car Alternator**



**Above Top Secret (2022) | Official Trailer HD**



Whether it is walking with my dog around the neighborhood, news about the tragic war in the Ukraine, washing my hands after going to the toilet, the ongoing pandemic statistic, taking a public bus ride downtown, watching a lecture on YouTube about the Cambrian explosion, fear of death, trying to imagine a self-conscious Biosphere, finding an old bone in a bush, writing these words... It's as if my world has gradually turned from a 3D, well organized structure into a flat chaotic 2D universe, moving from a state of certain order toward a state of complete disorder. Becoming aware of this change, I thought it might make sense to try and articulate it through writing, and in this way perhaps regain some order in my mind. It is how this “story” came to be. Each of the sentences below are taken from different (con)texts, selected and arranged here randomly.





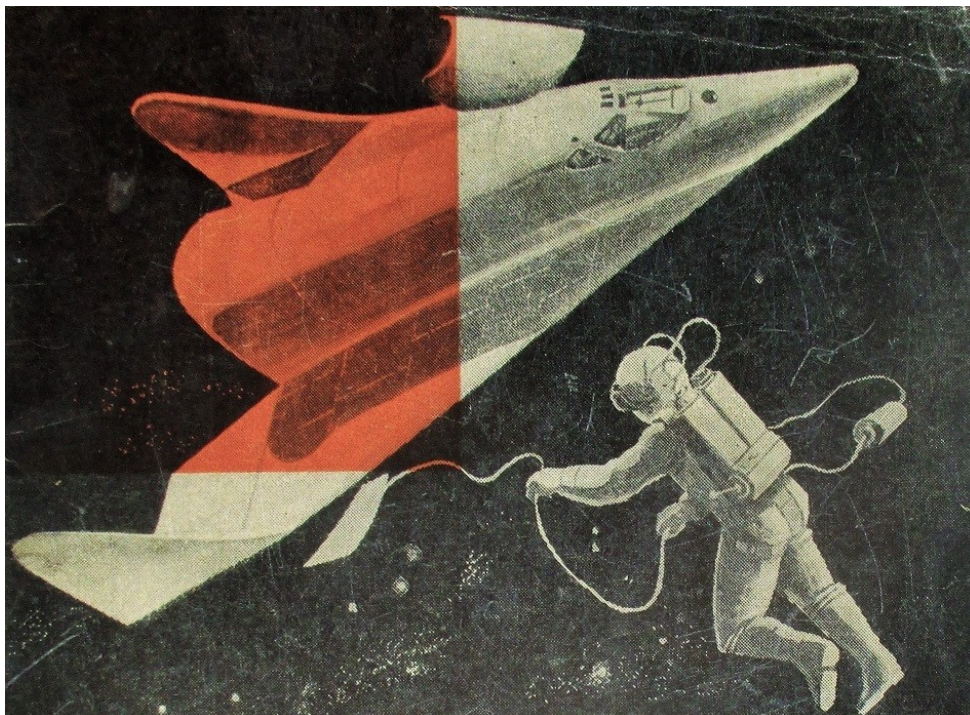
How would the modernizing New York art world have evolved had the Arensbergs not existed—or if Duchamp hadn't made his way to their door? The Ukrainians, it was said, would rediscover the truth of an aphorism attributed to Stalin: "quantity has a quality of its own." Before early Cambrian diversification, most organisms were relatively simple, composed of individual cells, or small multicellular organisms, occasionally organized into colonies. Euler states that he believes this problem concerns geometry, but not the geometry well known by his contemporaries, that involves measurements and calculations, but a new kind of Geometry, which Leibniz referred to as Geometry of Position. Recently, consciousness has also become a significant topic of interdisciplinary research in cognitive science, involving fields such as psychology, linguistics, anthropology, neuropsychology and neuroscience. There is only a mosaic of social deviations, when the political, because of its immorality, turns into a monstrous one. ” Next time you poke your head underwater, notice how it is difficult to tell which direction sound is coming from – that's because it's traveling so fast that there is no time for you to notice which ear it hits first! Whatever their nature might be, those nonorganic living forms in some way have to relate to their environment, at least by being able to distinguish hot from cold, light from dark. A man who was denied entry to the Museum of Modern Art because his membership had been revoked, jumped over the reception desk and stabbed two employees on Saturday afternoon, the police said. Skorzeny also trained Arab volunteers in commando tactics for possible use against British troops stationed in the Suez Canal zone. The main character, Sgt. Nick Fury, later became the leader of Marvel's super-spy agency, S.H.I.E.L.D. The fossil is so immaculate that we can find an absolutely beautiful set of intestines within its body. This is a "tough but fair" article that discusses the harsh reality of tsunami warning capabilities right now in the US system. Knowing this, we thought it would be a wonderful thing to introduce the baby to the sounds of all your voices, the voices we hope the baby will get to know out here in the world one day soon. The easiest way to determine if your comics fall into the “good” category is by looking at the cover price. In many concentration camps hair was routinely shorn from prisoners, usually on arrival. Often cast as an intellectual, Hurt starred in films such as *Lost in Space*, but was also effective in other kinds of roles, as in *I Love You to Death* and David Cronenberg's psychological drama *A History of Violence* (2005). As conditions in the city have grown direr and the death count has surged, word of the humanitarian catastrophe has leaked out



through intermittent phone calls, shakily shot videos and testimony from the handful of aid groups still working in the city. Air crash investigators have pulled most of the drone's remaining parts from a large crater it created on impact, including a partly damaged black box that should reveal the drone's flight path. Speaking from his home office in Topanga Canyon, Dechant drills into the old movies that helped inform this Macbeth and explains how something called the Moss-o-Matic added oomph to his Spartan sets. Like in the case of verbal languages it might be possible to define different grammars based on visual properties that would enable establishing a variety of visual languages to think in pictures, to understand and interpret the world and ourselves-visually. A pregnant woman who was photographed being stretchered out of a bombed maternity hospital in Mariupol last week has died, along with her baby. Albert Mayer developed a superblock-based city interspersed with green spaces which with an emphasis on cellular neighborhoods and traffic segregation. Research by media organizations and human rights groups has shown that police routinely execute unarmed drug suspects and then plant guns and drugs as evidence. An experiment conducted by the scientists from the University of Tokyo has now reinforced the view that RNA's unique talents have what it takes to explain how life bubbled forth billions of years ago, backing up what's known as the 'RNA world' hypothesis. There are moments in the film where the visual effects may be slightly insufficient but hopefully, never distracting. You can twist your brain in knots thinking about the implications of time travel. Personally I really hope intelligence stays around, at least long enough to set up a way to Von-Neuman seed the rest of the galaxy with life, even if it's just lichens, that'd be enough to kick off evolution on those planets. We may soon be eating bespoke diets for our microbiome, taking drugs to improve our brains and genetically modifying our unborn children to prevent disease. Theoretical, statistical, and analytical topics within the broad area of molecular evolution, in particular, elucidation of the relative roles of mutation and drift versus purifying selection in determining the pattern of nucleotide substitution, the dynamic and static features of the compositional architecture of genomes, and the relative fractions of functional and nonfunctional fractions of eukaryotic genomes.



Destiny of each individual organism is of no relevance for the entire biosphere as a whole, the way a particular cell is of no relevance for the entire organism and the way a single mRNA is irrelevant for the cell metabolism and the way a particular phosphate is irrelevant for an mRNA molecule. Each of these components is not unique within its structure and can be substituted maintaining the larger entity functional.





- Then on the level beyond the entire Biosphere the question is: what might be the larger living entity that has a Biosphere as its building block?



The way it was not possible from the "bacteria world" three billion years ago to anticipate the emergence of complex multi-cell organisms like humans it is hard to imagine the larger living structure beyond the scale of the current Biosphere.





In the time of bacteria Biosphere was very different from today, and it is not possible to anticipate how it will develop in the future, both as a single living entity but also as a possible part of a much larger living structure/organism. Or, as the largest living entity on Earth, it would represent the last stage of the evolution of life on earth.

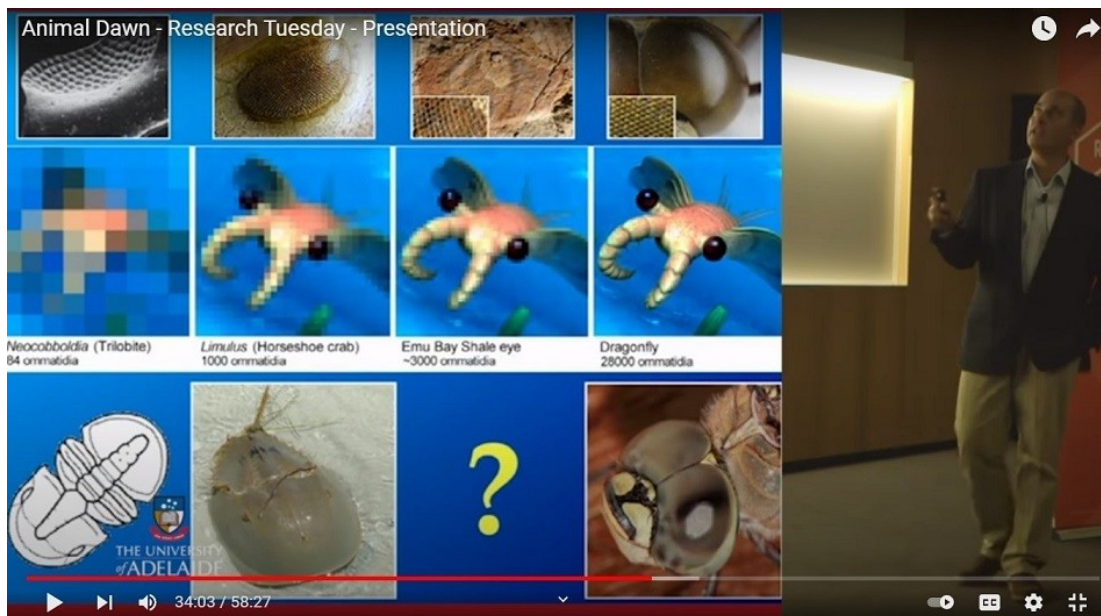


On the other hand, each of these components has its “own life” unaware of the role it is playing within the larger structure. If there is self-awareness of the Biosphere as a single living entity it will most probably be the first case that would include conscious components. It is not only the particles and waves that are moving through space, but also the processes and relationships like, for example, a cell metabolism or even something like our thoughts that maintain their continuity.





If human colonies together with the corresponding eco-system become established on the Moon, Mars and some other planets/moons, there is chance that in some very distant future they form biospheres of their own with a possibility to become conscious, then the Biosphere on Earth could establish a larger living structure together with those other biospheres.



Growing interest in exoplanets and extraterrestrial life and all the resources devoted to this endeavor in last several decades, could be also an expression of Biosphere's desire to find out is there any other life beyond Earth or is it alone in the entire Universe.

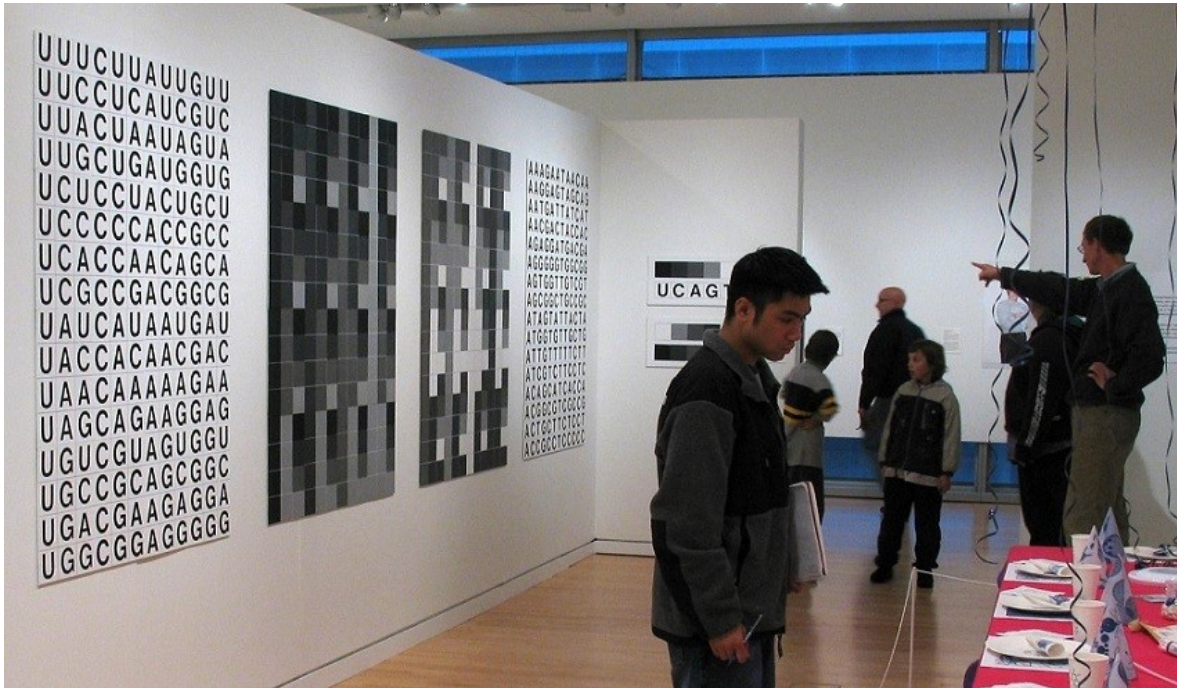


This is something I would be curious to find out if I would be such a being moving alone through Cosmos, aware and observing the space around me, but at the same time being tied to a rock without possibility to control my movement.



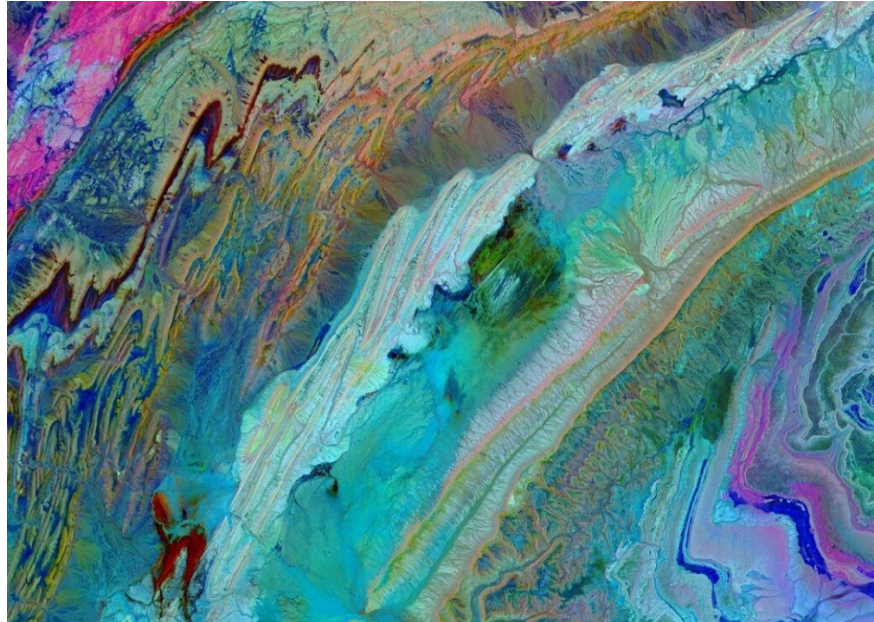


Establishing and maintaining distinction between "in" and "out"(later materialized through the membrane), is the fundamental property of life. Membrane was separating and protecting living molecules inside the space (“territory”) from the outside.





This is how the distinction between “I” and “not I” became possible enabling the exchange between ”in” and “out” through this separation "line". It is some kind of metabolism that includes observation: hot, cold, light, dark, silence, sound (vibrations).



Awareness from "within" about the "outside" requires some kind of memory. Without memory there is no "recognition" of previous experience, there is no observation.





Recent study shows how a molecule that remains crucial to the survival and reproduction of every living thing today can inch its way towards an evolving system if it works as a team.



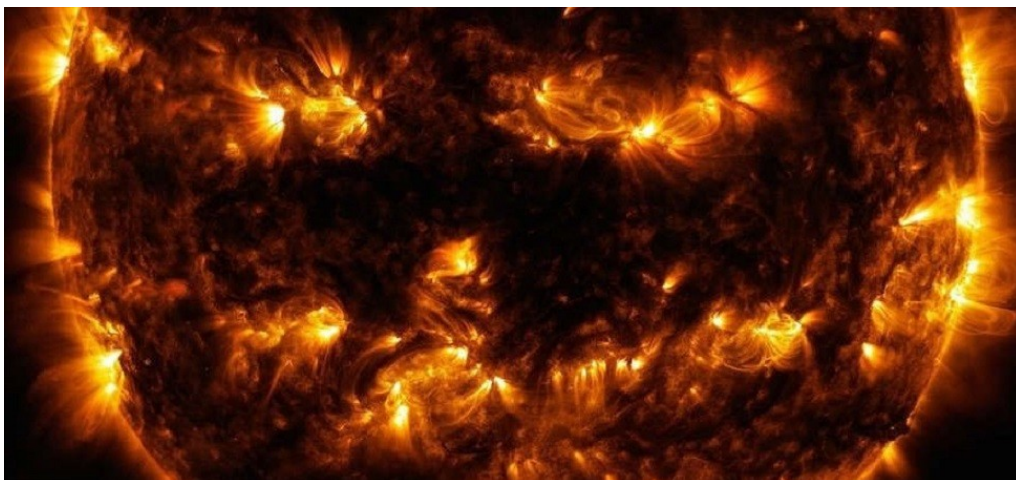
"We found that the single RNA species evolved into a complex replication system: a replicator network comprising five types of RNAs with diverse interactions, supporting the plausibility of a long-envisioned evolutionary transition scenario," says evolutionary biologist Ryo Mizuuchi.



If I would try to imagine myself as a Biosphere just “waking up” as a conscious living being. This would probably happen gradually, but at some point I will begin to realize a very strange and unpleasant situation I happen to be in. I will be on a rotating rock that moves through space with one side warm, exposed to light (Sun) and another cold in the dark with one large bright spot (Moon).



- Probably one full rotation cycle(24h ) will be a basic time unit, like one heartbeat. I will feel, observe, even be aware of the situation but there will be almost nothing I could do to change it, not to mention to be able take some control over my destiny. Question is how “I” would actually see and what/where would be my memories? Will it be one single “I” or multiple (dis)connected “I’s”.





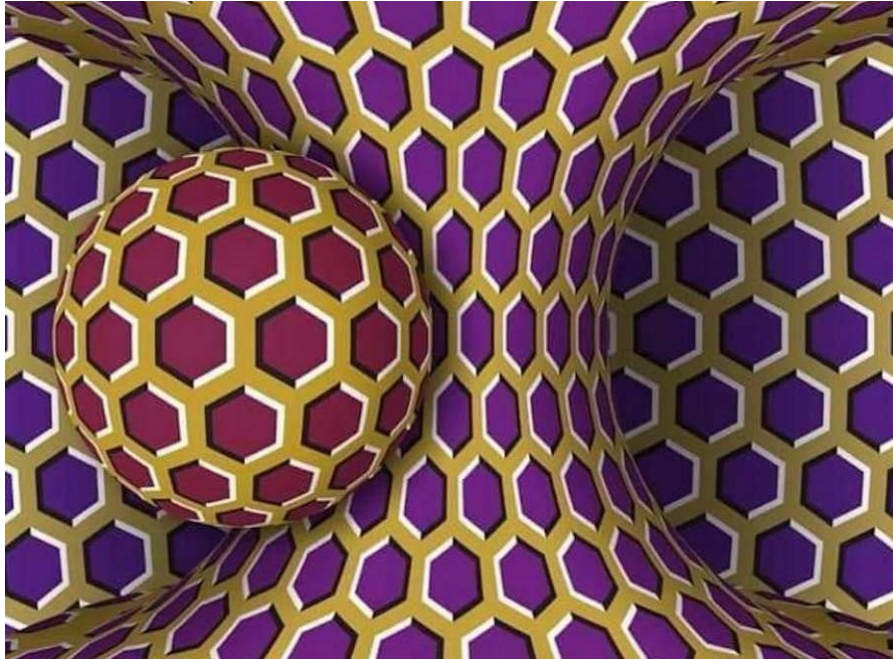
It is during the travels to space and the Moon that the Biosphere for the first time had a chance to see itself from a distance, through human eyes. Question is: how such a complex entity consisting of billions of smaller living entities, each with its own “picture of the world” will perceive the world as a single being/mind? Would that be possible at all?



Its balloon like body consists of the thin layer between Earth’s crust below and atmosphere above. Therefore, it can perceive itself from within, through the countless receptors of its components, and from the outside, through human eyes on a space station, satellite images, etc.



Also, question is what will be its relationship with developed technology(AI) that begun with wood and stone tools. Archeological and human remains are Biosphere remains as well and preserved by it.



On the scale of the Earth , the entire Biosphere just a tin skin, balloon like surface, almost like a cell membrane but, in this case on the both sides of the membrane is non-living matter. On one side (“inside”) is lifeless soil, and on the other(outside) is the atmosphere and beyond. As if all living processes are happening within the membrane itself.





Each living entity today, from a single microbe to the entire Biosphere has unbreakable connection with the first life form that once upon a time appeared on Earth. The Biosphere was born with the emergence of first life and continue to grow and evolve until now, but will this process continue indefinitely or, following the logic of life on Earth, there will be a point when it will stop to live and die like all other living beings?



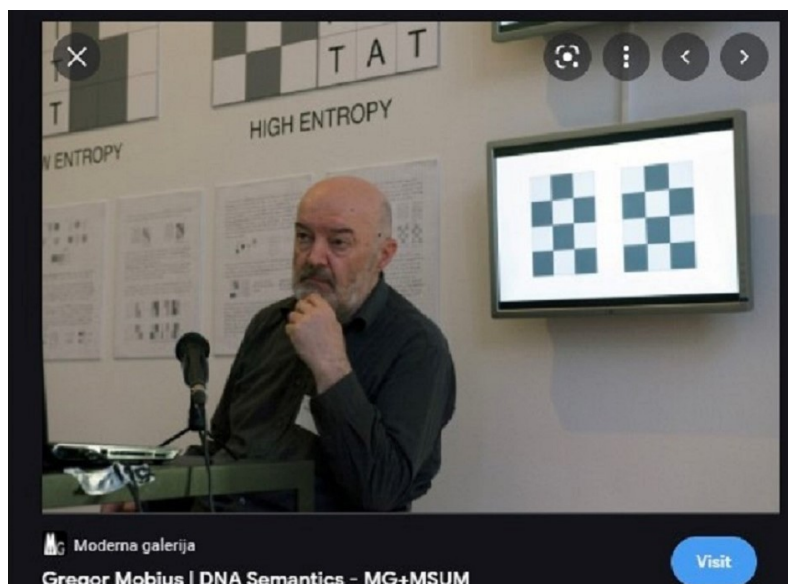
What about all those memories acquired and saved in each living being, what happens with them after each of them dies? All these internal memories built in the body dissolve and disappears while the new memories are beginning to be formed as each new living being is born...



Pictures, films, texts are not memories without a living observer, until being observed by a living (human) being.



-From the position of survival, the earliest and simplest life forms like microbes are as successful as any other existing and much more complex life forms. The emergence of life mystery, transition from non-living to living matter, is one issue; while the necessity of the process that took place afterwards, which, through billions of years of evolution led the life from microbe level to me sitting in front of a computer and writing this, appears to be another kind of mystery.





Complexity of life forms seems not be a necessity for their survival on Earth, but it might make easier to moving life further into space, beyond Earth's limits. This would implicate that sending telescopes and humans into space is in some way encoded in the "living algorithm", perhaps even since the very beginning.



Do the members of some other species except humans contemplate about the "origin of life" or perhaps trying to find out if there is life beyond the Earth?



Two most important events for any life-form are birth and death. An observer as a living entity could observe another living entity but a nonliving as well. It can also observe itself: self-observing. This kind of observer could “see”, interpret, understand and react to what it sees. Living is observing, it is a crucial property for survival. Question is if there is some kind of a nonliving observer with similar properties possible?

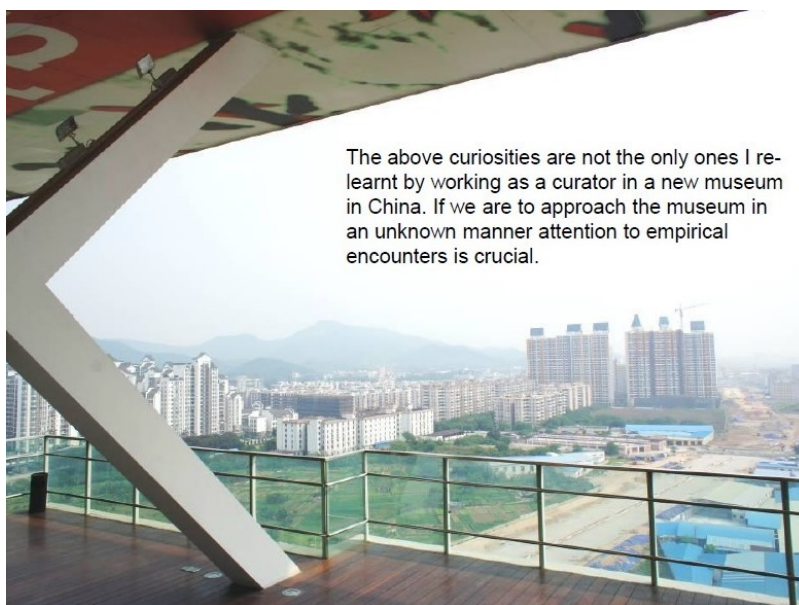


Spreading life beyond the Earth and Solar system would be possible only with some multigenerational expedition on a large space-ship containing a micro ecosystem/habitat (“Interstellar”), or if traveling faster than speed of light is becomes reality. At this point both options seem very farfetched. There is also a possibility of substantially extending human life span.





The existence of any living organization, a single cell, a complex organism or a society, is based on two opposite requirements: stability and change. They has to be properly balanced, since emphasize on stability would lead to conservation (black) and death while tilting toward change could lead to chaos(white) and again to death. Life is a good balanced combination of both (gray).



The above curiosities are not the only ones I re-learned by working as a curator in a new museum in China. If we are to approach the museum in an unknown manner attention to empirical encounters is crucial.

It is strange how birth and death, as events of cosmic proportions for any living being, are at the same time among the most common, the most ordinary, phenomena happening all the time everywhere in nature.

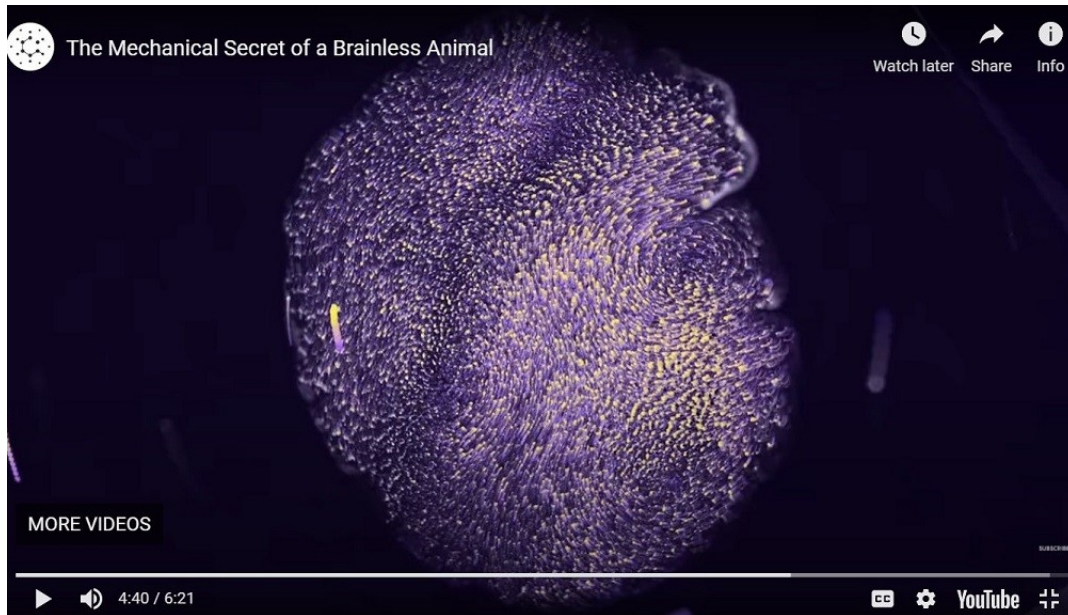


However, on the individual level the main event in the life of any living being is the end of life (death). It seems there is no good narrative in which death of an individual would become meaningful and acceptable (two best known previous attempts are resurrection/ reincarnation and posterity).





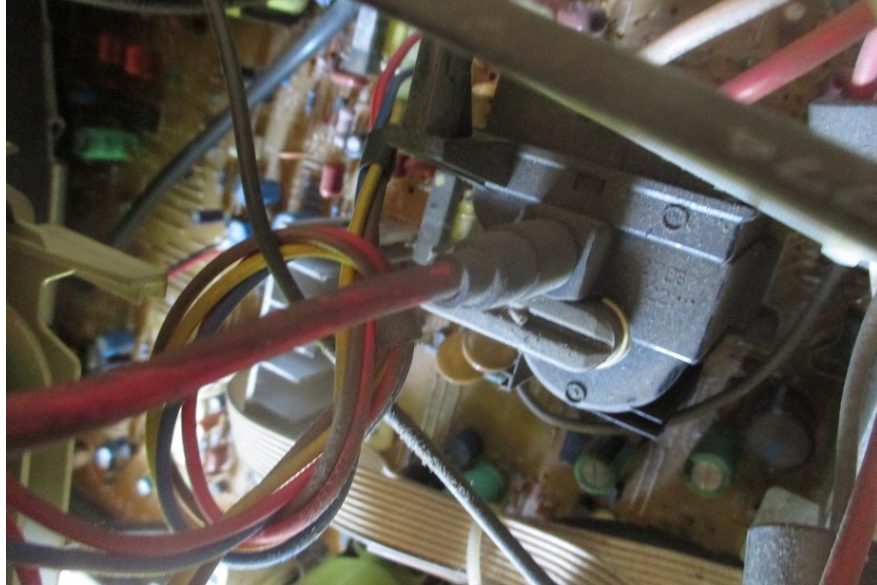
First of all there is a fear of death. Then, there is a sadness of realization that life will eventually come to an end; not only any life or all life, but most importantly my/your life. That is the end of everything.



Memory is a story that gives a meaning to life enabling the idea/experience of “time flow”.



Instead of bio-chemical approach to understanding the emergence of life, perhaps perceptual approach could be more productive. Understanding how first life have perceived and interpreted the world around it (inside-outside or living-nonliving). If we could “retrieve” those images that could be “hidden” in RNA/DNA strands of present life forms, we could get some knowledge about the first life as well.

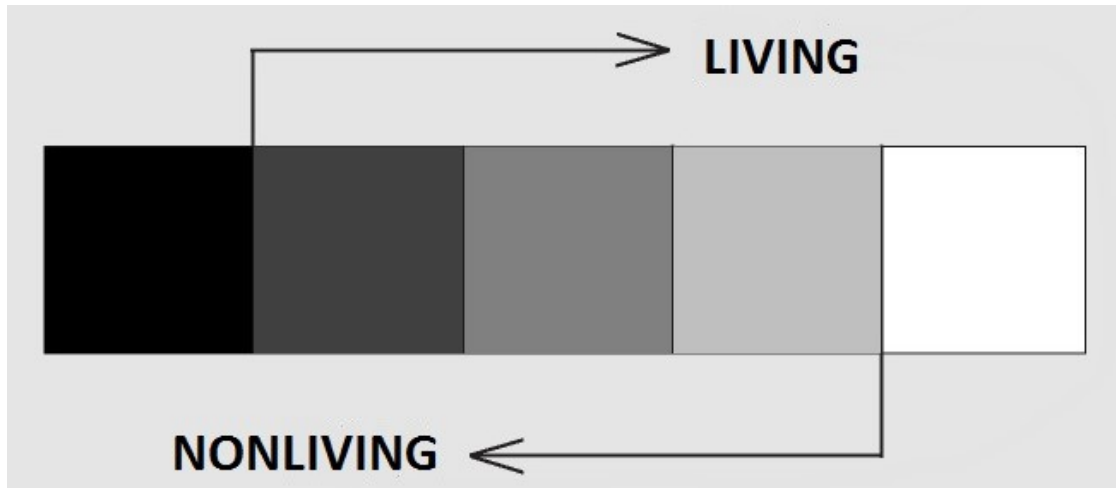


If we try to explain the emergence of life on Earth through some kind of proto-RNA then it is most likely that there was a certain number of bases that represents a “tipping point” when a nonliving molecule became a living self-replicator which was at the same time the first “observer”.





Below a certain order of magnitude we all consist of nonliving matter. Transition from nonliving into living, from dead to alive, still remains entirely unknown and unexplainable.



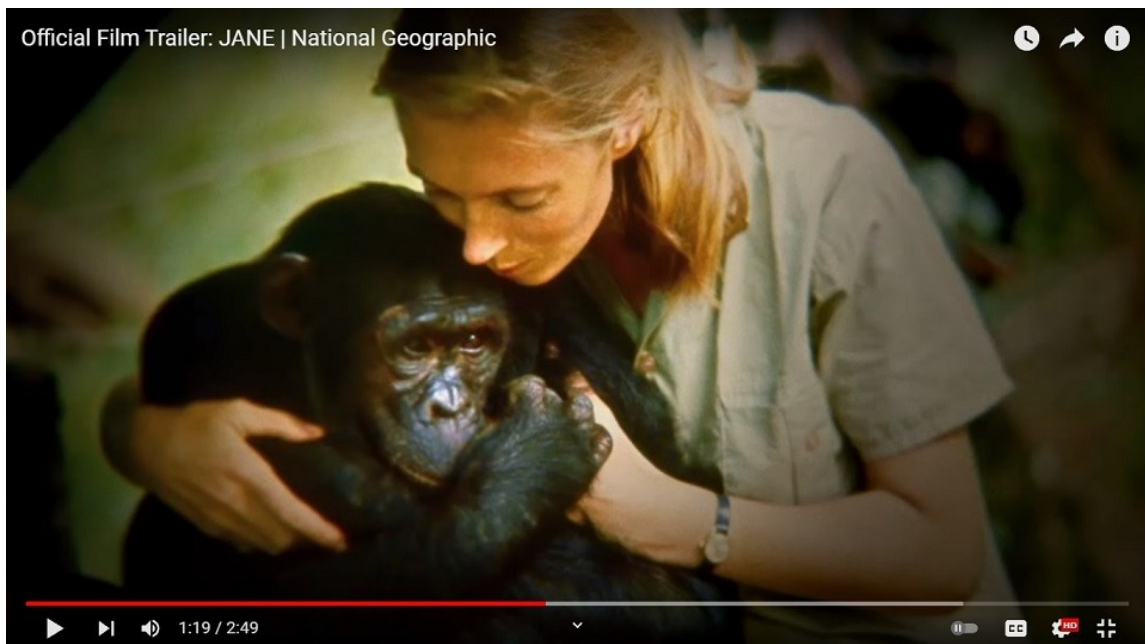
A question here is: where living matter ends and non-living begins, and vice versa. Most likely it is not a clear binary case but it happens in stages: dead(black), almost-dead(dark), uncertain(gray), almost-alive(light) and alive(white). This might help to at least conceptually explain the transition from nonliving into living, with three stages between that belong to both states.



Possibilities for life appearing “easy” throughout the Milky Way and life being only on Earth seem to be 50-50%. This resembles the binarity of the images recorded by the earliest life forms. In other words, life appeared on Earth and nowhere else or the entire Universe is “teeming with life”.



This is an example how from same “facts” we could come up with opposite conclusion. It is worth noticing that these statements/observations/assumptions are possible only from a living position, it is beyond reach of nonliving matter.





Talking about abiogenesis, the emergence of life, turning nonliving into living matter, it is happening all the time with all living matter today. Below some order of magnitude, all living matter on the level of molecules of water or CO<sub>2</sub> consists of nonliving matter.



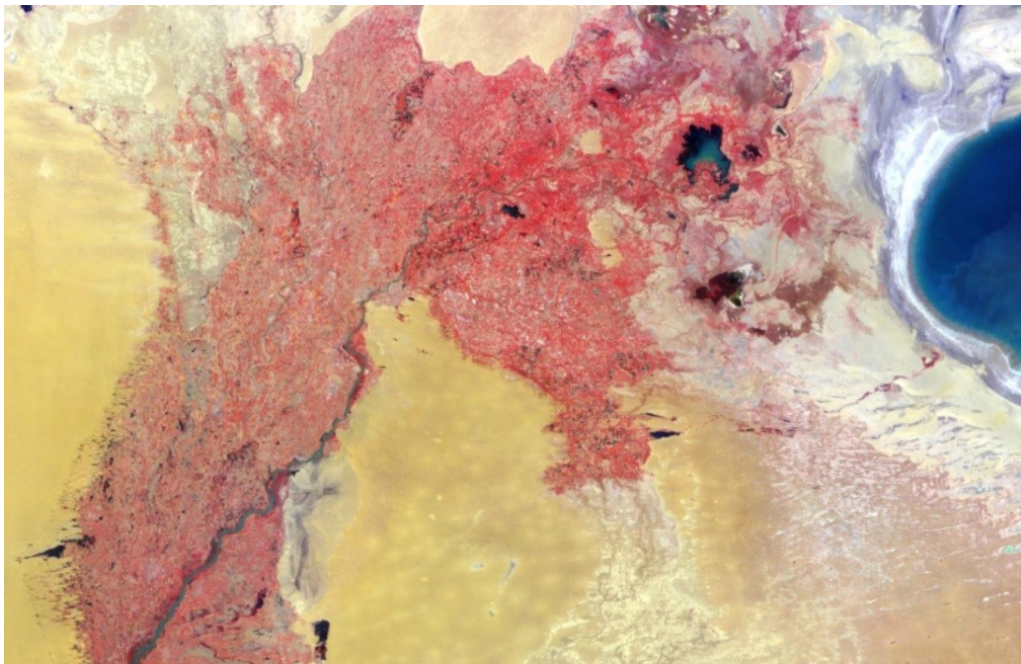
It is a question, as we are zooming out and the picture is getting larger, at what point these nonliving molecules become alive and what makes them to turn into living matter?(“proton motive force”?)



Eternity is timelessness, it is nonliving- death. Life is finite, temporary but it is meta-nonliving. Living can see/observe nonliving (and living), while nonliving cannot see neither living nor nonliving.

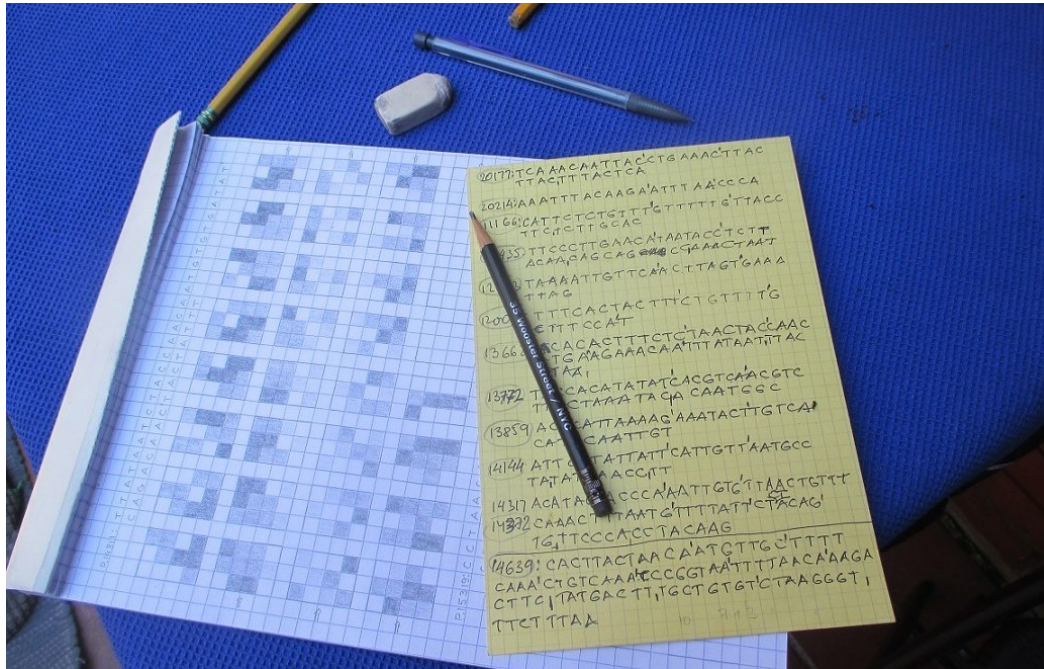


If 2D images derived from RNA/DNA sequences are “pictures of the world” recorded by the living matter, then perhaps another kind of life form, regardless of its molecular structure, might perceive the world in a similar way. Its “pictures of the world” might correspond to those recorded and saved within RNA/DNA.

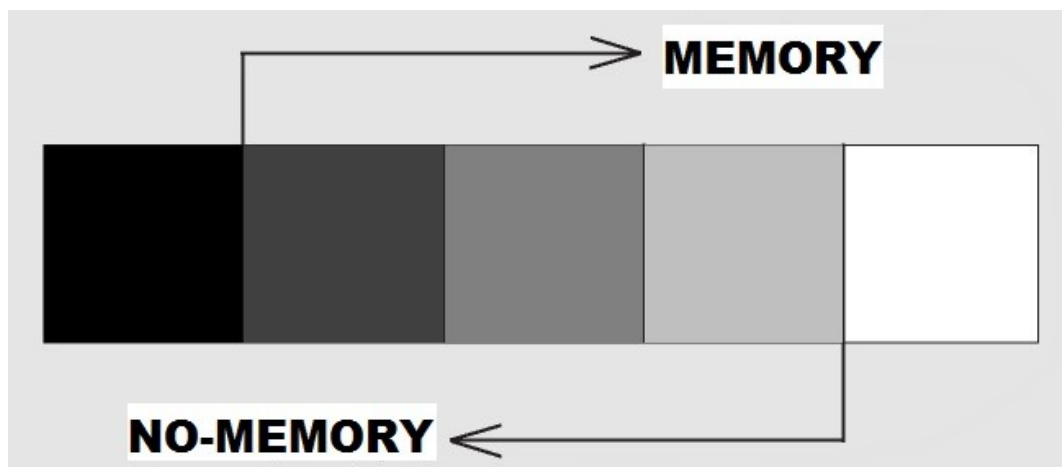




In other words, if the two living forms are structurally different, having different even unrelated material properties, they might still perceive the world in a similar way. Temporariness is the price life has to pay in order to be able to see the world.



One of the most important properties of any life form is capability to, in a certain way, interact/observe the world around it. But there is no observation without some kind of memory. Life can see/recognize those properties of the world that are previously being observed and stored in its memory. End of life (death) also represents a state of no-memory, a state of complete oblivion. Perhaps it might make sense to structure this transition from memory to no-memory in five stages/degrees, using the familiar five-element gray scale.



If the Big-Bang hypothesis is correct then there was a time when there was no life in the entire universe and life must have appeared as some kind of abiogenesis process. Thus, whether life appeared on Earth or came from space (panspermia), it is a result of biogenesis, from nonliving became living matter.



There are three fundamental unknowns: what is life, what is consciousness and what is intelligence. Question here is if intelligence is a property of the living matter only.





It seems that evolution was not necessary for life to survive on Earth. For example, there are much more microorganisms now than three billion years ago. However, the evolution appears meaningful and even necessary in case of some catastrophic destruction on Earth(huge meteorite, climate change).



It is only the life in form of humans that could anticipate this kind of an event and perhaps be able to move some of its members beyond the Earth and thus preserve life.

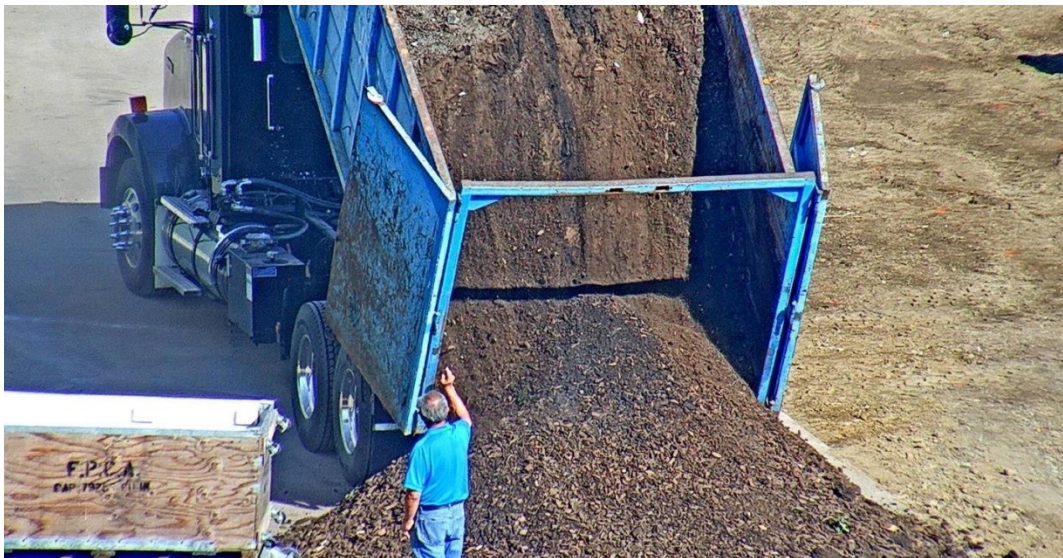




In order to understand/explain transition from nonliving to living matter it will be necessary to come up with a completely new approach, something that will be based on assumptions and logic very different from those unsuccessfully tried so far. Perhaps a very different way of understanding what life is.

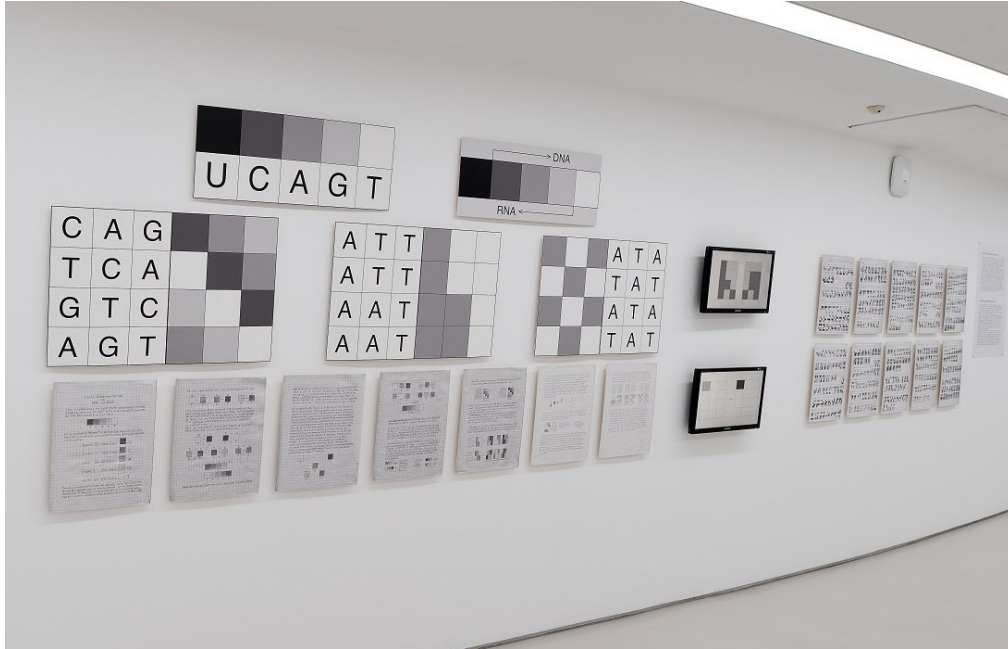


Important properties of life: “pleasure” and “pain”. Each living entity is not independent of its environment. In fact these are two inseparable parts of life and its metabolism. In that sense the Biosphere’s immediate environment consisting of crust, water and air are its integral parts.





Perhaps we should use different time scale for the period when the Biosphere consisted only of one-cell organisms? It would be similar to, let's say, the first year of a baby compared with any year of its adult life. In other words, biological time is not the same as chronological. This might mean that three billion years of one-cell Biosphere was in fact biologically much longer (?).



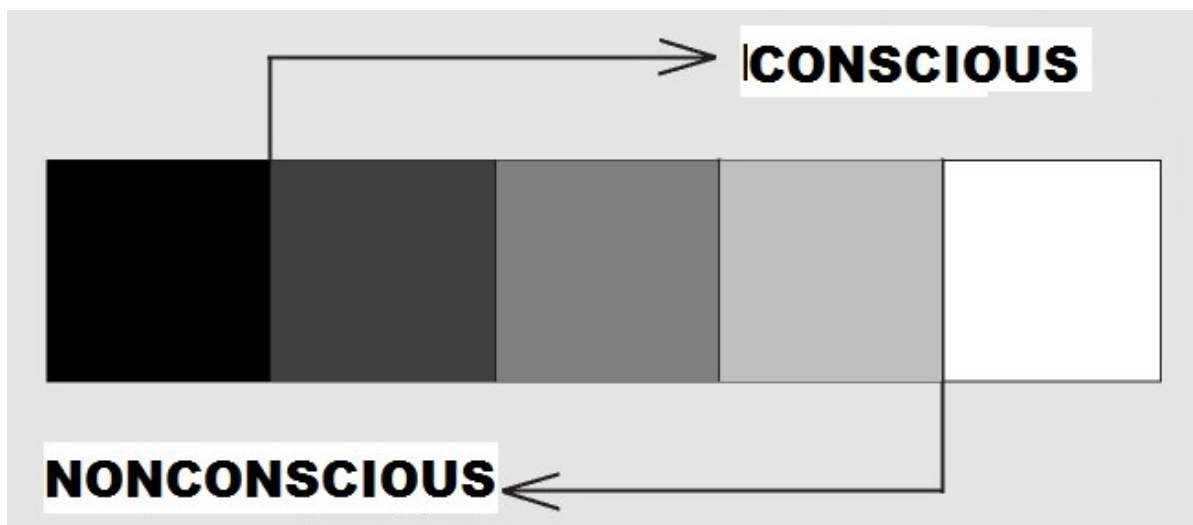
Cambrian explosion, life begins to go above and below of the ocean floor, from horizontal 2D space begin to move up and down into 3D space.



It is important and necessary to begin articulating a completely different story about the world/life/existence from one that is dissolving now. The way someone like Descartes already tried once upon a time.



The question today is: what would be the properties of the next main narrative? Who would be its leading characters and what kind would they be. And would this story be based on individual characters at all? Also, what would be the key notions(ideology) of the next narrative? What would be its concept of time, if time will be one of its key notions at all?





Each of these two narratives is a story, with its own narration as a chain of usually connected events/sequences, each with its own interpretation of the collective past. In one it is the life of Jesus (or the creation of the World) and in another starts with first humans or the Big Bang.



In both narratives there is also a vision of the collective future: in one it is apocalypse in another it is progress. And there are characters in each of them, some could be fictional and some real (historical). But in both cases for those who believe in a particular story, they are “real.”

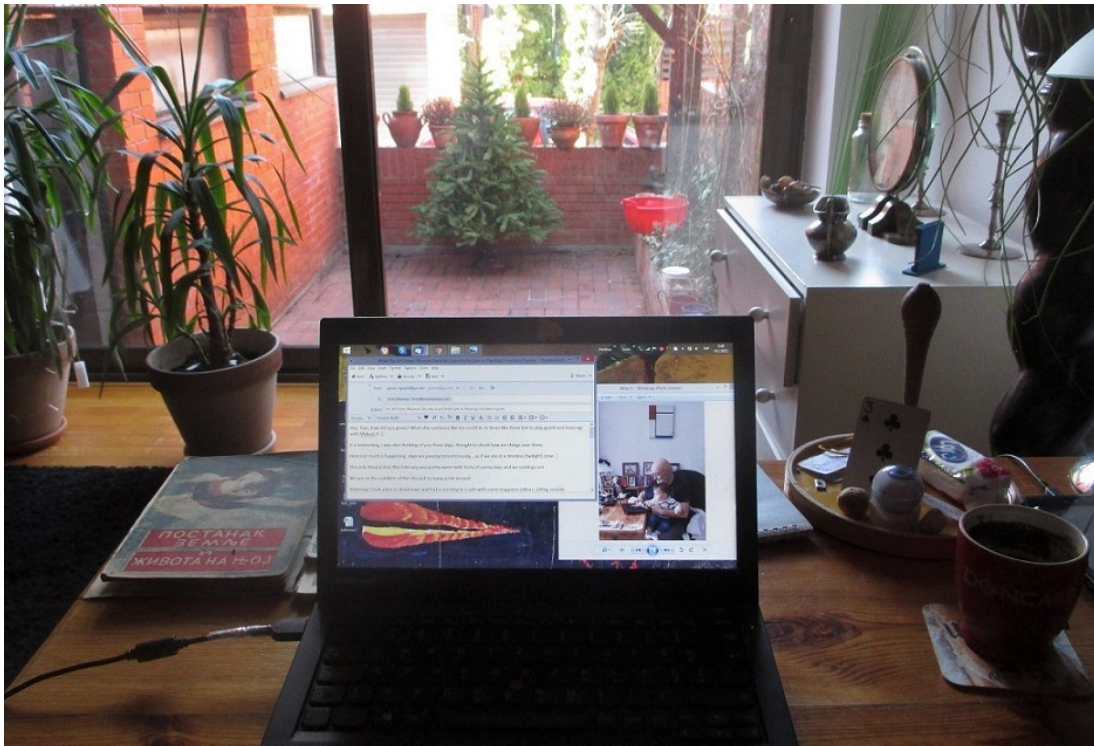




All these are about the collective narrative that determines the ideology and values of the certain social group. On the other hand any group consists of individuals, each with its own personal story (life story) that begins with the birth and ends with the death.



There are also relationships between the individuals of the certain group and with those that are outside of the group (not “us”).



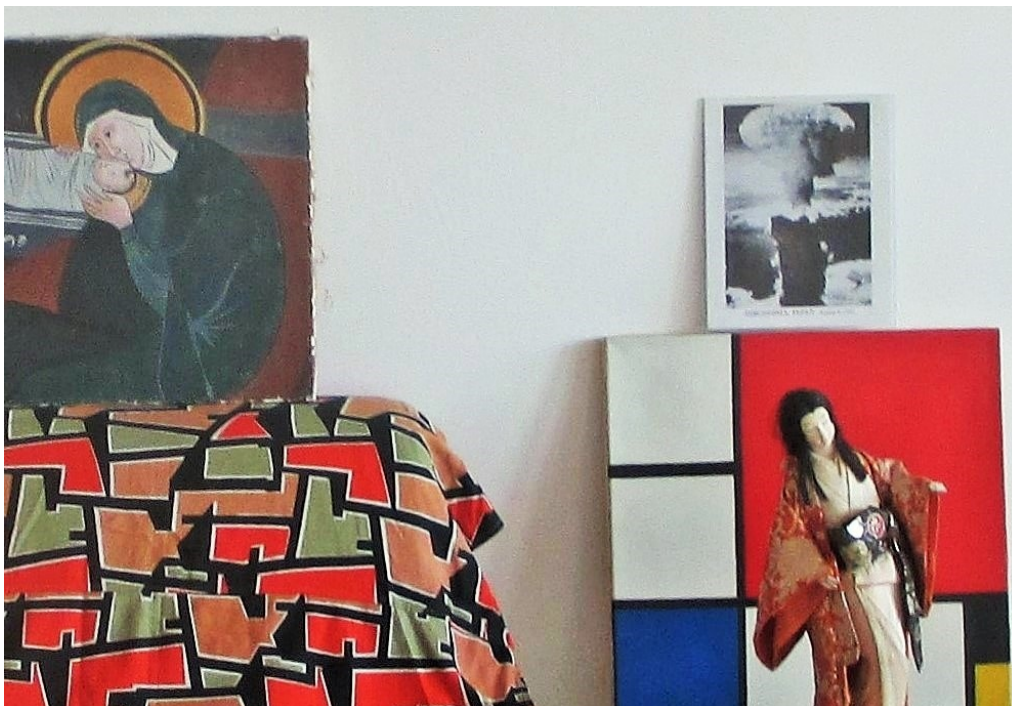




How daily narrative (structuring a day in life) relates to the individual life story or to the collective story? What is the relationship between the biology of life (including birth and death) to the individual and collective narratives?



From nonexistence we came to existence, and from existence we will go back to nonexistence (birth - life – death; nonliving-living-nonliving). Two key events for individual are birth and death.





However, since there is no one's pre-birth memory, or of the birth, the anticipation of death becomes the main notion of life/existence.

The Remarkable Neuron: Erin Schuman at TEDxCaltech

**CONSIDER THE PROTEIN CONTENT OF A SYNAPSE**

- ~500 different protein species per synapse
- ~50 copies of each protein
- ~25,000 proteins per synapse
- ~ $10^4$  synapses per cell
- 250,000,000 proteins per cell (dendrite + synapse)

**ESTIMATE:** An additional 250,000,000 proteins in the axon  
So ~500,000,000 proteins per cell

So, on average, we have something like  
500 million proteins per cell,

3:44 / 14:30

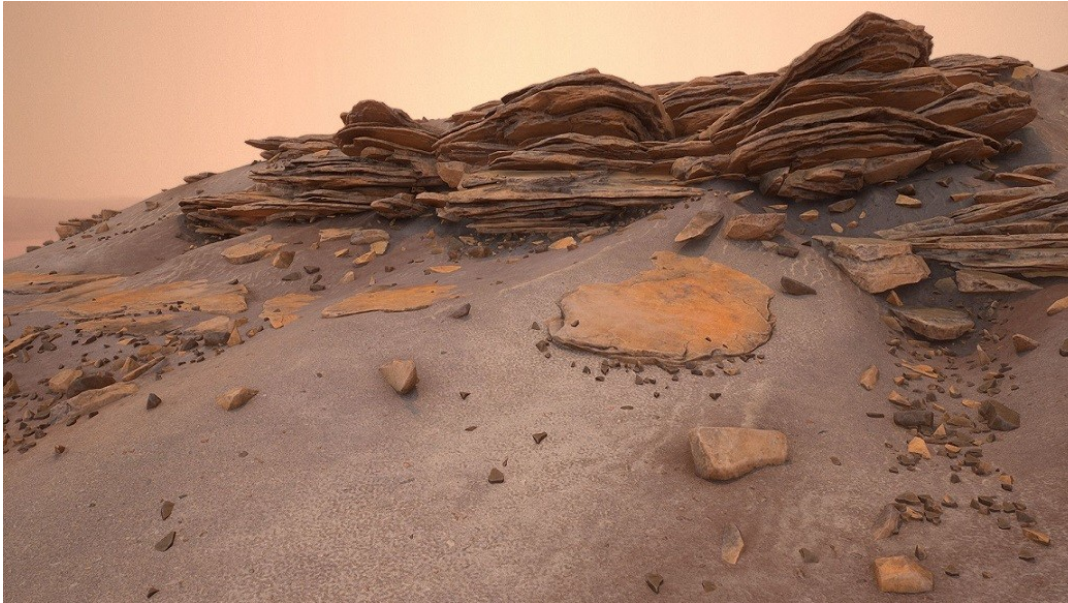
independently organized TED event

TEDxCaltech

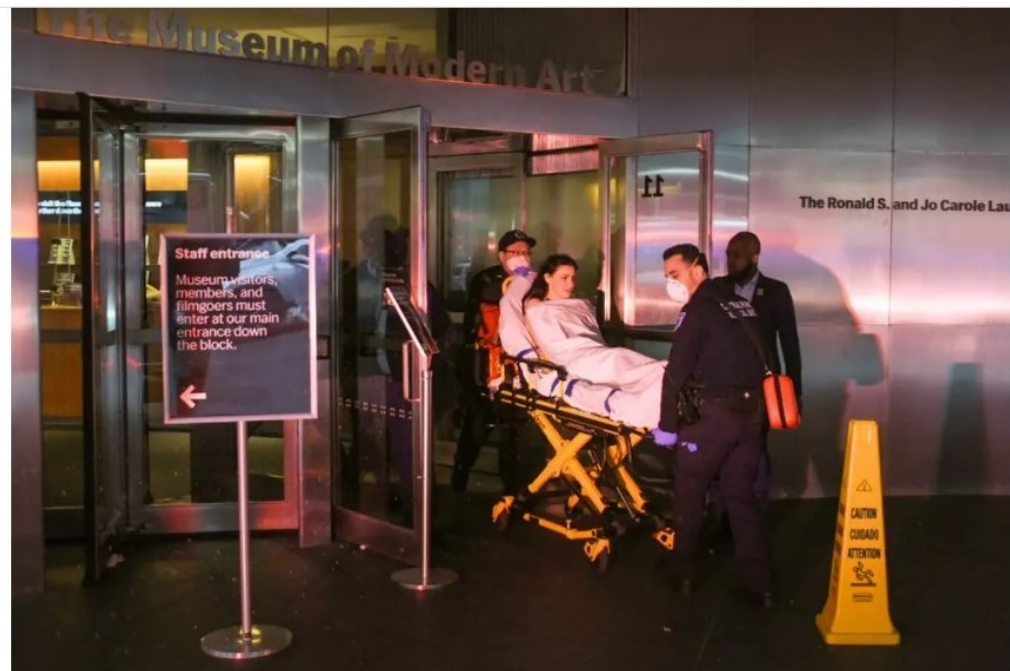
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How it will relate to the previous two, will it forget it or remember it in its own way (like a meta-history, for example)? Both Christian and historical narratives were defining the “Western Civilization” in last two millennia. The next narrative should be broader, relevant to the other civilizations as well.

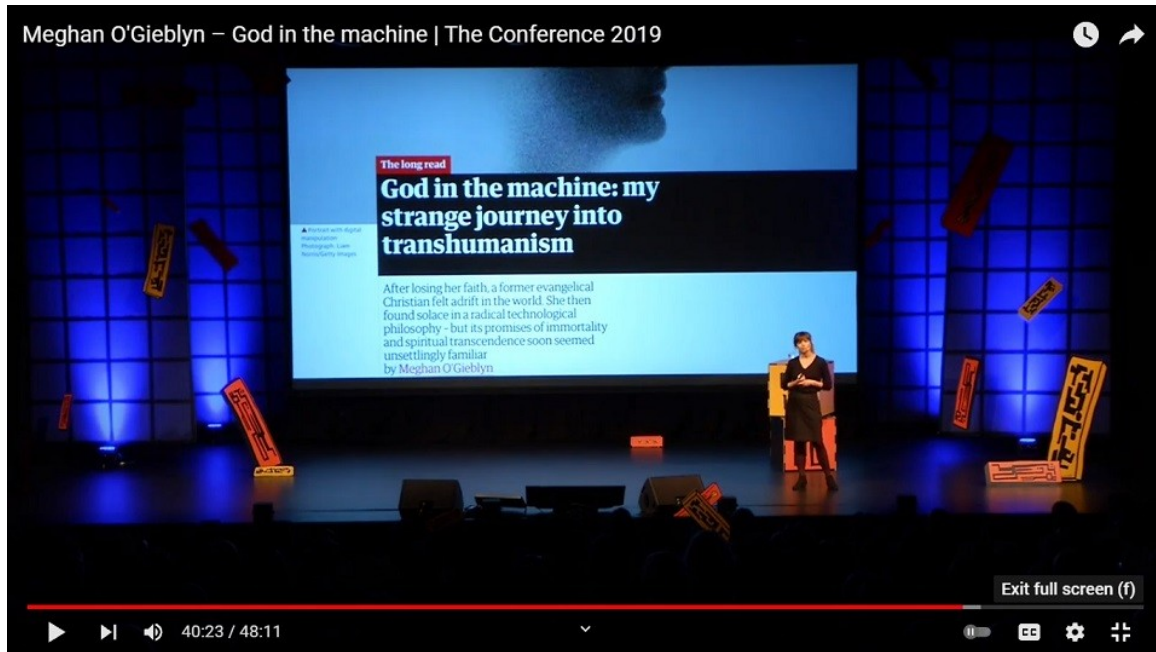


The way astronauts are carrying with them a micro- atmosphere into the space, resembles the first animals that moved from the sea to the soil all carrying within them a micro-hydrosphere.

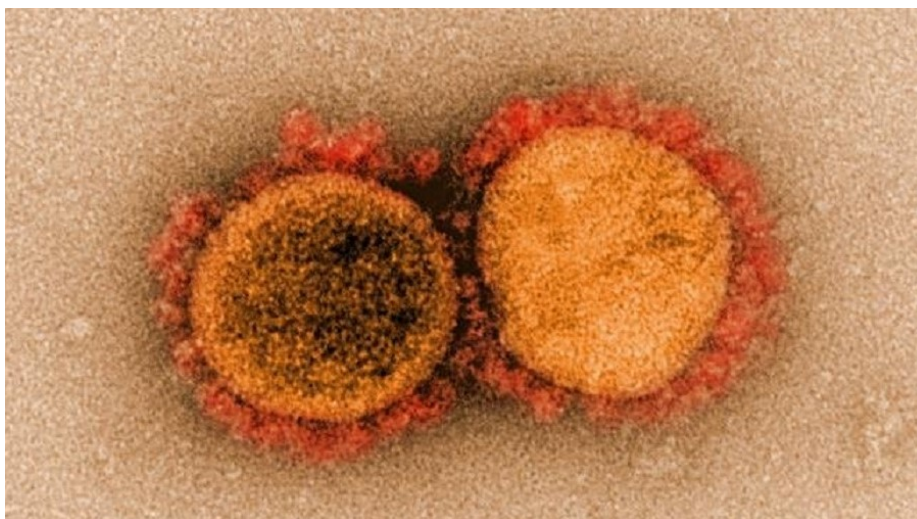




One possible option would be a view from some non-organic(AI) position, or from some alien, non-DNA based, life form. Another related question is if the Biosphere could or would ever reach the point of self-awareness, and how would that happen?



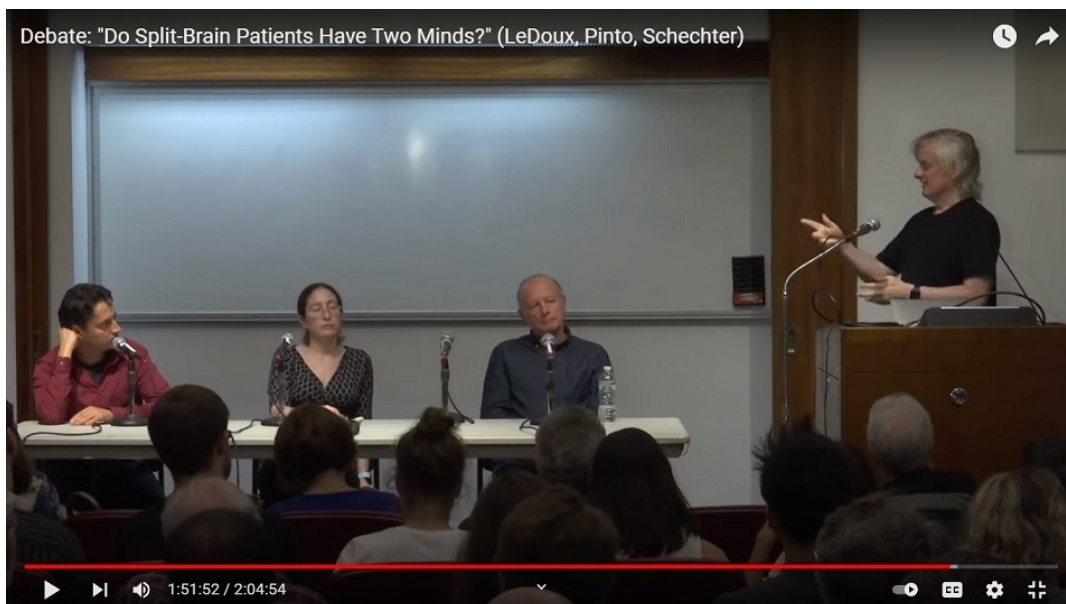
The question is, if the Biosphere ever emerges as a single being, what would be its main properties. Would it be able to “see” the world only from the inside out, or it might become capable to perceive itself from the outside as well? This seems highly unlikely since it would have to be a position outside of the (organic, DNA-based) life as we know it.



Perhaps it might start as a bird-flock and morph into ant-colony model. At some point it might even become something closer to the complex living organisms with highly specialized cells and organs and with the brain as its central organ, where in case of the Biosphere the human (brain)network would be parallel to the single (human) brain.



In case of higher multi-cell organism there is a specialization of cells and division of roles/labor, but the parallel specialization appears among ants and bees. So, which of these two models of organizing living matter: bird-flock or ant-colony might be manifested/expressed in case of the Biosphere?

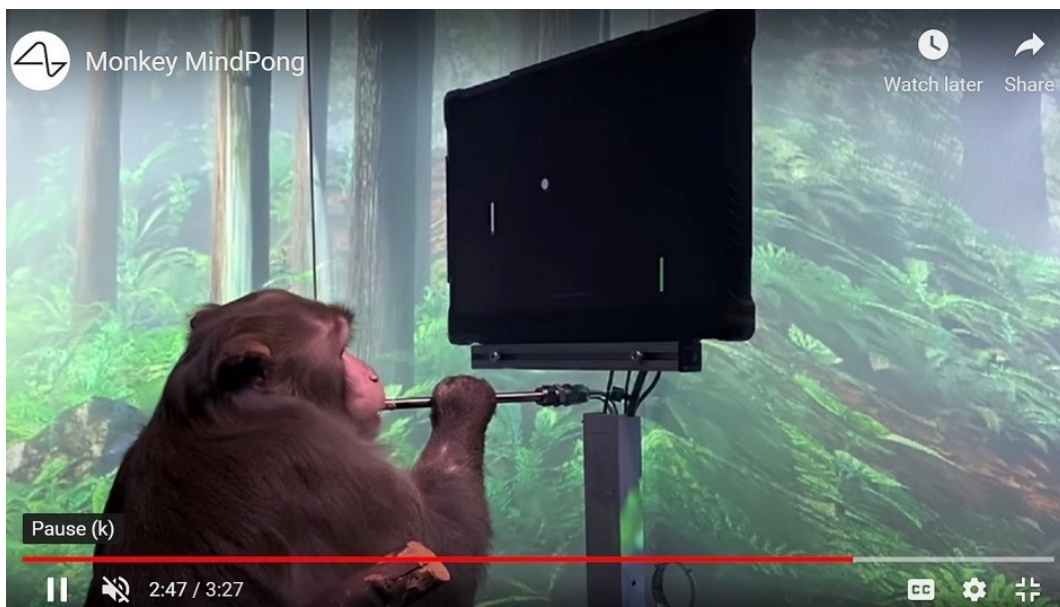




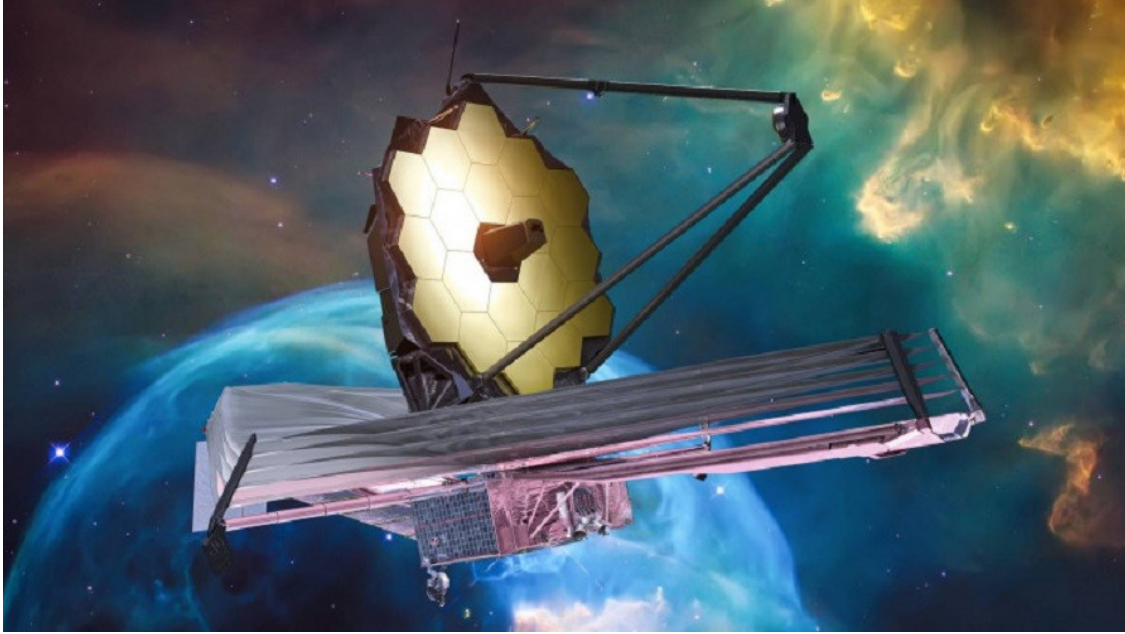
Another question relevant in case of the Biosphere is: how the emergence phenomena in case of the living matter are different from the non-living? How transition from one-cell to multi-cell organism differs from one fish and a fish school, or one bird and a bird flock?



This example shows that same unit can take part in forming different types of emerging phenomena (stream, wave), and that it can even take part as a unit within another emerging event (droplet, wave). Also, the transition from a gas atom to a liquid molecule is not matter of large quantity, but from a droplet to a wave, it is.



Does the emergence processes in case of non-living and living matter (water and ants) have some similarities? It seems that in cases of non-living matter the tipping point is reached by the quantity of units.

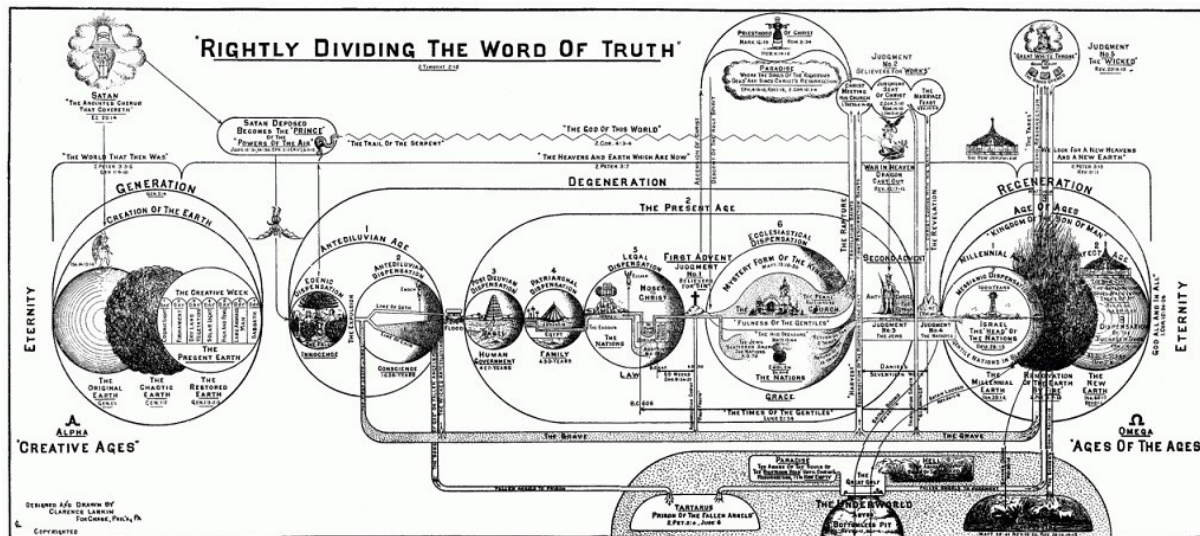


First, two gas atoms of hydrogen and one of oxygen are producing a liquid molecule of water. Then a number of water molecules produce a droplet of water with its own emerging properties. Then a single water droplet joins many others in producing a river stream or an ocean wave.





What is the tipping point in the process of moving from one stage (single bird) to another (flock), from a single entity (unit) to a much larger group formation with some very different properties? Is it something similar that was happening in the transition from non-living to a living matter and vice versa?



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When the elements/ parts of the emerging entity(fish in the school, bird in the flock or an ant in the colony) take part in forming the new larger entity, it appears that each individual part is not “aware” of this, they do not and cannot “see” themselves as a part of the emerging phenomenon from the “outside”.



*The end of Life/observer is the end of the Universe/observed.*

Gregor Mobius

March 2022